Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Approximation and evaluation of the spontaneous abortion rate following COVID-19 vaccination in pregnancy

To the Editor:—I read with great interest the article published by Trostle et al,[1] which reported on the outcomes of pregnant women at the New York University Langone Health who received at least 1 dosage of a messenger RNA COVID-19 vaccine. I would suggest that adjustments be made in the calculation of spontaneous abortion to faithfully evaluate the impact of the vaccination.

In the article, the spontaneous abortion rate in the first trimester (6.4%) was calculated by dividing the 8 spontaneous abortions by the 124 pregnant women who received a vaccination in their first trimester.[1] When a pregnant woman received the COVID-19 vaccine, the risk for spontaneous abortion during the period from the start of pregnancy to the week of gestation in which the vaccine was received was excluded. If an abortion happened during this period, the subject was automatically excluded from the study, which introduced a selection bias. Adjustment is therefore required to faithfully reflect the actual risk of spontaneous abortion following administration of the COVID-19 vaccine during pregnancy.[2] Based on the details of the available data, different levels of approximation can be made.

When the week of gestation during which the vaccination was received is unknown, a rough estimation can be made by assuming that the weeks of gestation at vaccination were equally distributed. Based on the spontaneous rate of abortion of each week of gestation reported in the literature, it is possible to make a very rough estimation for adjustment.[2] When the week of gestation during which the vaccination was received is known, it is then possible to make a more accurate approximation by calculating the risk for spontaneous abortion for each gestational week and generating a cumulative risk.[3] In the reported study,[3] the unadjusted risk of spontaneous abortion in the first trimester is 11% and the cumulative risk of spontaneous abortion in the first trimester is calculated as 13.61%.

The spontaneous abortion rate is highly dependent on the population group under investigation and it is therefore difficult to evaluate the impact of the COVID-19 vaccination on the risk for spontaneous abortion at a single institution. A more reliable evaluation can be performed by constructing a reference group that contains pregnant women who did not receive the COVID-19 vaccination by recruiting them to the reference group at the same gestational week as their counterpart in the case group. It would be possible to evaluate the impact of COVID-19 vaccinations on spontaneous abortion rates and other relevant outcomes by comparing these 2 groups.[4]

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